after endovascular repair for abdominal aortic aneurysm: a prospective cohort study. Eur J Vasc Endovasc Surg 2004;28:357-64.
7. Elkouri S, Gloviczki P, McKusick MA, Panneton JM, Andrews J, Bower TC, et al. Perioperative complications and early outcome after endovascular and open surgical repair of abdominal aortic aneurysms. J Vasc Surg 2004;39:497-505.
8. Harris PL, Vallabhaneni SR, Desranges P, Becquemin J, Marrewijk C, Laheij RJ. Incidence and risk factors of late rupture, conversion, and death after endovascular repair of infrarenal aortic aneurysms: the EUROSTAR experience. European Collaborators on Stent/Graft Techniques for Aortic Aneurysm Repair. J Vasc Surg 2000;32:739-49.
9. Lifeline Registry of EVAR Publications Committee. Lifeline registry of endovascular aneurysm repair: long-term primary outcome measures. J Vasc Surg 2005;42:1-10.
10. Mor M, Niv G, Niv Y. Patient retention in a clinical trial: a lesson from the rofecoxib (VIOXX) study. Dig Dis Sci 2006;51:1175-8.
11. Aarts F, van Sterkenburg S, Blankensteijn JD. Endovascular aneurysm repair versus open aneurysm repair: comparison of treatment outcome and procedure-related reintervention rate. Ann Vasc Surg 2005; 19:699-704.
12. Collin J, Murie JA. Endovascular treatment of abdominal aortic aneurysm: a failed experiment. Brit J Surg 2001;88:1281-2.
13. García-Madrid C, Joas M, Riambau C, Mestres C, Muntana J, Mulet J. Endovascular versus open surgical repair of abdominal aortic aneurysm: a comparison of early and intermediate results in patients suitable for both techniques. Eur J Vasc Endovasc Surg 2004;28:365-72.
14. Fillinger MF. Postoperative imaging after endovascular AAA repair. Semin Vasc Surg 1999;12:327-38.
15. Prinssen M, Wixon CL, Buskens E, Blankensteijn JD. Surveillance after endovascular aneurysm repair: diagnostics, complications, and associated costs. Ann Vasc Surg 2004;18:421-7.
16. Zarins CK, White RA, Moll FL, Crabtree T, Bloch DA, Hodson KJ, et al. The AneuRx stent graft: four-year results and worldwide experience 2000. J Vasc Surg 2001;33:S135-45.
17. Leurs LJ, Laheij RJ, Buth J. What determines and are the consequences of surveillance intensity after endovascular abdominal aortic aneurysm repair? Ann Vasc Surg 2005;19:868-75.

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DISCUSSION

Dr R. James Valentine, (Dallas, Tex). I congratulate the authors on an interesting and provocative study. Endoleaks and other problems are expected in a minority of patients who have had endovascular aneurysm repair (EVAR). Most of us have assumed that patients will be compliant with follow-up as a condition of placing these devices. In this retrospective study, however, the authors found that a third of their EVAR patients did not comply with an established follow-up routine. The authors' most important finding is that there were significantly more major adverse events in the patients with inadequate follow-up compared to those with complete follow-up. This clearly demonstrates that the long-term success of EVAR is dependent on compliance with a monitoring program. As the authors suggest, these findings might be representative of a real problem on a national level.

One might object to the notion that the Greenville Hospital System represents the general practice of vascular surgery in the US. However, it is difficult to argue with the authors' conclusion that long-term follow-up for EVAR is considerably worse outside of controlled clinical trials. The addition of a full-time clinical research nurse did not improve the follow-up, so we are left wondering whether the findings are a function of the patients in Greenville, South Carolina. This brings me to me first question. Where did the patients come from? Did distance from home to the hospital have an impact on follow-up compliance?

The data from the present study are remarkably similar to our findings in a VA study evaluating compliance with a watchful waiting program for small aneurysms.[1] We found that about a third of the patients did not return for repeat imaging studies, similar to the proportion of your patients who were lost to follow-up after EVAR. My second question is whether we might be able to predict poor compliance based on behavior before EVAR. Was there any indication that your patients missed appointments to follow aneurysms when they were smaller?

The findings in this study should send a message of caution: EVAR is clearly not appropriate for all patients. My final question is how are you going to integrate this information into your practice? Will you try to predict compliance as a condition of placing EVAR, and do you have any suggestions on how we can improve the compliance rate in general practice?

Dr Wesley B. Jones: With respect to the first question of where the patients come from in our patient population, the majority of our patients come within a 20-mile radius from our institution, at least 80%. It didn't appear that distance or geographic location was a factor in poor follow-up compliance.

With respect to the second question about patients with poor follow-up compliance in abdominal aortic aneurysms and if there is anything we could do to predict this poor compliance. Clearly, that was felt to be the next step from our study, and we didn't arrange the study for logistic regression to identify any associated patient variables that may be associated with poor follow-up compliance. This may bear a second study from us on this point. The crux of the problem was asymptomatic patients don't appear to feel like they need to go to the doctor and this has been shown time and time again previously.

With respect to the third question of what do we do next and how are we are going to integrate in our practice. We have discussed this and we feel that there are two ways to do this. One may be to take a page from bariatric surgery programs and preoperatively screen these patients aggressively for patients that would be well compliant, and those that we can identify preoperatively as being poorly compliant we would offer traditional open repair. The other opportunity would be a postoperative environment that would foster good follow-up compliance. One might even argue that financial incentives to the patient, such as breaks in their insurance costs or some kind of fiscal reward for actively participating in preventative care, may be an opportunity for improvement.

REFERENCE

1. Valentine RJ, DeCaprio JD, Castillo JM, Modrall JG, Jackson MR, Clagett GP. Watchful waiting of small abdominal aortic aneurysms: appropriate for all patients? J Vasc Surg 2000;32:441-50.

INVITED COMMENTARY

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In the abdominal aortic aneurysm (AAA) endovascular repair (EVAR) post-procedural management paradigm, optimal graft surveillance methods and intervals for individual patients remain poorly defined. Many post-EVAR AAA patients undergo what in retrospect prove to be unnecessary, expensive, and potentially morbid imaging studies, whereas others experience sometimes catastrophic device-related events between prescribed imaging intervals.